Tarrazu Valley, Costa Rica: Study in Coffee Farming

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Purpose

Figure 1: Road into sustainable coffee research farm in the Tarrazu Valley of Costa Rica.

After spending two weeks in Costa Rica, I was moved and motivated by the landscape surrounding me. The mountainous region my sustainable coffee farming research was located in took my breath away (Fig. 1). The unending emerald green valleys were covered with coffee farms and dotted with forest patches and small towns. With this vista before me, I began to contemplate the indigenous knowledge behind the placement of coffee farms.

This project is the result of my initial questioning. It is my hope to follow this investigation by answering questions regarding farm productivity as it relates to proximity to infrastructure as well as developing a more extensive farm data set within the Tarrazu Valley of Costa Rica.

Introduction



- Coffee is the second most traded commodity next to oil, on a transactional basis (Geromel *et al.*, 2008)
- Much of world production is from smallholder farms of 2-3 hectares (Bosselmann *et al.*, 2009)
- Smallholder farms each produce about 100 to 200 pounds annually (Bosselmann *et al.*, 2009)
- Coffee is from shaded habitats and has limited ability to grow in full sun (Ramalho *et al.*, 1997)
- Tropical effects such as cloud cover, topography and differentiation of woody cover types challenge land cover mapping (Cordero-Sancho, 2007)

Objective

To evaluate the relationships between coffee farm productivity in the Tarrazu Valley of Southwestern Costa Rica (Fig. 2) as it relates to the valley's:

- Ground Cover
- Slope
- Aspect
- Solar Radiation

I anticipated to find:

- Highest coffee production in areas of least slope with a southwesterly aspect
- Highest coffee production in areas of moderate solar radiation levels.

Objective

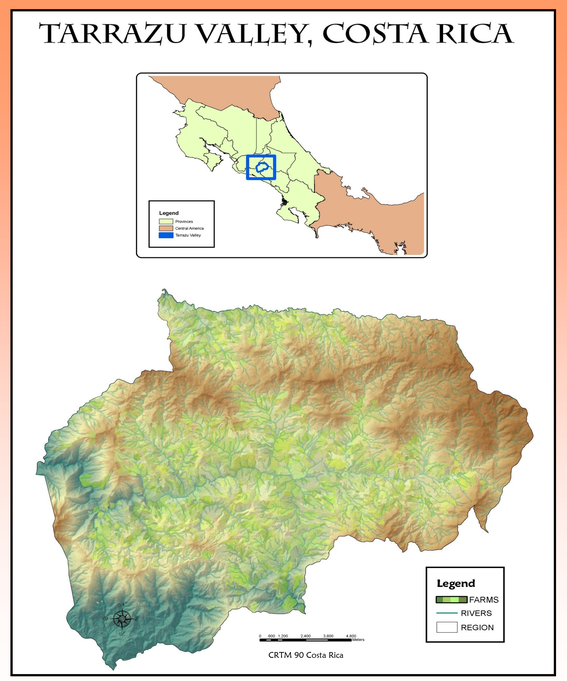
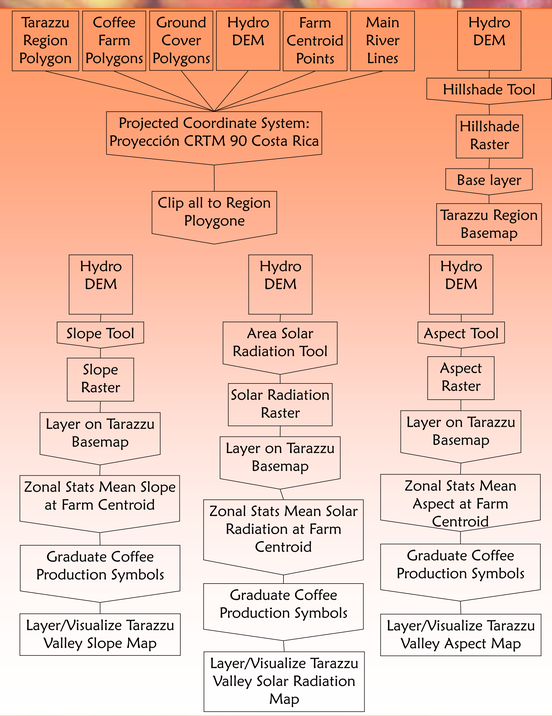


Figure 2: Topography and coffee farm locations in the Tarrazu Valley of Southwestern Costa Rica.

Methods



Results

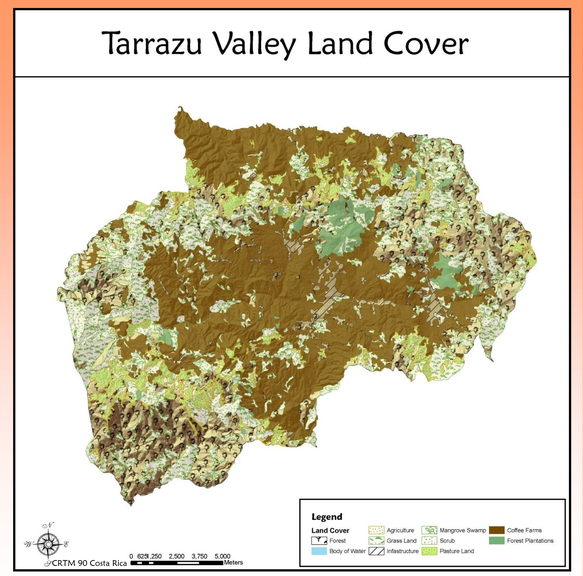


Figure 3: Coffee farming covers 20% of the region's 689,577,291 m²

Results

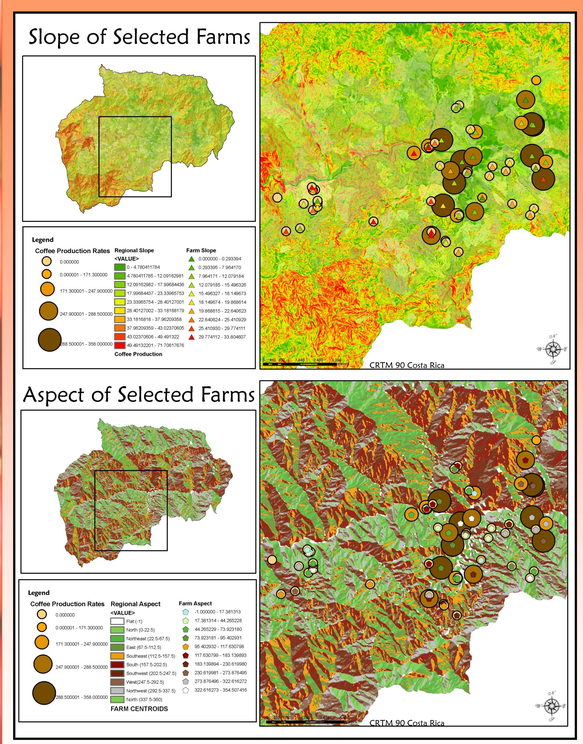


Figure 4: On the 54 selected farms, the mean slope was 18.008 degrees and the mean aspect was southwesterly at 155.27955.Higher coffee production rates were found, at a slightly higher rate, in areas of north-northeasterly aspects and slopes of 7 to 15 degrees.

Results

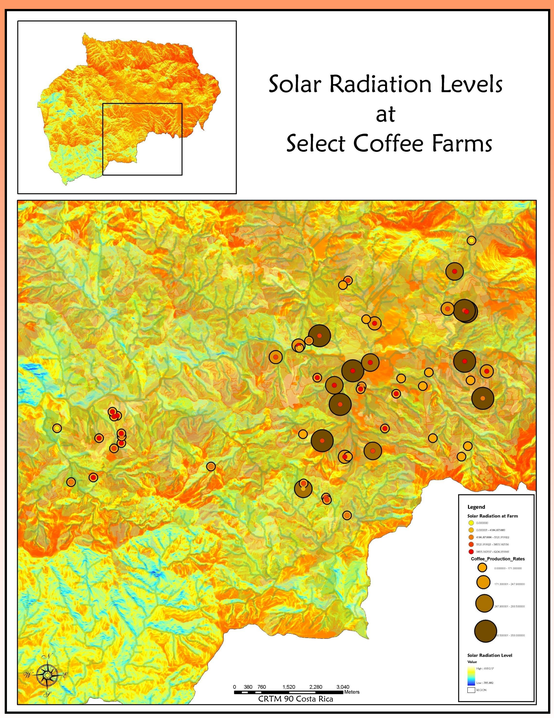


Figure 5: Moderately high solar radiation levels were dominant in the region and were associated with all levels of coffee production. Percent shade cover per farm was not used in the calculation.

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